

GROUP SNOW TRANSIT



INTRODUCTION TO GROUP SNOW TRANSIT

Snow transit technologies have been devised for one of several areas with special needs or constraints that are not well served by traditional bus or rail systems. Although snow removal equipment and techniques have made it possible to extend bus transit and fixed guideway transit technologies into mountainous areas, the demand levels are often too low and the snow depths too great to justify such investment. In other circumstances, the remote character of the setting would be impacted if snow were to be removed or permanent facilities were constructed. It is in these circumstances that snow transit is most applicable. This technology category includes snow coaches and snow buses.

Snow transit vehicles are those specifically designed or retrofitted to allow the vehicle to travel on the surface of potentially deep snow pack without becoming stuck. This requires vehicles to have weight distribution over a much larger surface area than standard bus transit vehicles. These vehicles are manually operated and are self-propelled by an on-board engine and power source. Snow transit vehicles typically allow for a moderate level of passenger interaction and assistance on the part of the operator.

Snow transit vehicles have three major advantages.

- First, they are inexpensive, in that they do not require investment in the construction of any infrastructure since they travel over the snow.
- Second, they offer unequalled routing flexibility. Because they are not tied to a fixed guideway, they can easily be re-routed to respond to varying demand and can cover broad areas of demand.
- Third, snow transit vehicles can serve a wide range of passenger demand levels by using small to very large vehicles.

Snow transit vehicles have some disadvantages that make them unsuitable for most uses other than travelling over snow.

- First, because of their highly specialized design, they are not suitable for use on “normal” roads during the off season. Also because of their specialization, there is little opportunity for temporary use/ownership in lease, rent, or charter arrangements, relative to bus transit in general.
- Second, because most snow transit vehicles are currently powered by diesel engines, noise levels and the emission of pollutants may be objectionable in remote, natural settings.
- Third, they are capable of serving only low to moderate passenger loads.

Two vehicle types are discussed below. The snow coach is the smaller of the two vehicle types. It is fitted with tank-style tracks, rather than wheels. The snow bus carries more passengers and rides on over-size rubber tires that distribute its weight.

GROUP SNOW TRANSIT

Snow Coaches



SNOW COACHES

Other Names: Passenger Snow Cats, Cat-Converted Vans

Description

Snow coaches provide a cost-effective means for accessing remote, snow-covered or rugged terrain not easily served by other vehicle technologies. The snow coach is most useful for low passenger demand on short to moderate length trips. These vehicles are best suited to point-to-point travel with a minimum amount of passenger boarding/alighting. These vehicles are either specifically designed as snow coaches (i.e. passenger snow cats) or are standard vans with cat-track conversion. The snow coaches can be single units or can tow an additional unit. The tracks can be made of metal and/or rubber.

Characteristic	Advantages	Disadvantages
<i>Maneuverability</i>	<ul style="list-style-type: none"> - Highly maneuverable on snow with short turning radius. - Very stable even over rough terrain or steep slopes. 	<ul style="list-style-type: none"> - Slow if used on standard roads.
<i>Durability</i>	<ul style="list-style-type: none"> - No significant advantages. 	<ul style="list-style-type: none"> - Low to moderate life span of 10 to 12 years. - High level of maintenance required on tracks.
<i>Operator Availability</i>	<ul style="list-style-type: none"> - Ready availability of operators. 	<ul style="list-style-type: none"> - Requires special training for safety.
<i>Noise</i>	<ul style="list-style-type: none"> - No significant advantages. 	<ul style="list-style-type: none"> - Noise from internal combustion engine may be objectionable.
<i>Fuels</i>	<ul style="list-style-type: none"> - Diesel or gasoline typical. - Alternate fuels available for van conversions. 	<ul style="list-style-type: none"> - No significant disadvantages.
<i>Cost</i>	<ul style="list-style-type: none"> - Low cost relative to standard transit buses. 	<ul style="list-style-type: none"> - No significant disadvantages.
<i>Vehicle, Parts, Service Availability</i>	<ul style="list-style-type: none"> - Wide number of suppliers of vans for conversion. - Wide availability of engine mechanics. 	<ul style="list-style-type: none"> - Limited number of suppliers of snow coaches and conversion track parts relative to std. buses. - Relatively lower availability of track mechanics.
<i>Compatibility with Federally-Managed Sites</i>	<ul style="list-style-type: none"> - Low weight transfer to ground (per sq. ft.) enables travel over snow or sensitive terrain. - Travel over snow allows accessibility into remote areas without permanent investment in infrastructure or associated environmental impacts. 	<ul style="list-style-type: none"> - No significant disadvantages.
<i>Vehicle Features</i>	<ul style="list-style-type: none"> - No significant advantages. 	<ul style="list-style-type: none"> - Steering difficult on hardpack or ice.
<i>Other</i>	<ul style="list-style-type: none"> - No significant advantages. 	<ul style="list-style-type: none"> - No significant disadvantages.

Physical Data

Length:	10 to 18 feet (single unit)
Width:	8.0 to 9.0 feet
Height:	8.0 to 10.0 feet
Weight:	6,500 to 15,000 pounds
Power Source:	Diesel or gasoline

Low Floor:	Not typically available
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Economic Data

Vehicle Cost:	\$70,000 to \$210,000
Vehicle Life:	10 to 12 years

Operating Data

Maximum Operating Speed:	20 to 40 mph (snow)
Maximum Grade:	25° = 47% (snow)
Turn Radius:	25 to 30 feet
Passengers	
Seated:	8 to 16
Standees:	Not typical
Total:	8 to 16
Fuel Consumption:	2.0 to 5.0 mpg

Notes

If tracks are rubber, there is more utility and maneuverability in no-snow (dry pavement) conditions.

GROUP SNOW TRANSIT

Snow Buses



SNOW BUSES

Other Names: Tundra Buggy

Description

Snow buses provide a cost-effective means for accessing remote, snow-covered or rugged terrain not easily served by other vehicle technologies. The snow coach is most useful for low to moderate passenger demand on short to moderate length trips. These vehicles are best suited to point-to-point travel with a minimum amount of passenger boarding/alighting due to their single-door, high-floor design. These vehicles use over-sized tires to distribute the weight of the vehicle.

Characteristic	Advantages	Disadvantages
<i>Maneuverability</i>	- Maneuverable on snow and other off-road conditions.	- Not generally usable on standard roads. - Slow maximum operating speed.
<i>Durability</i>	- Can have highly durable interiors.	- Shorter life span than transit buses.
<i>Operator Availability</i>	- Ready supply of operators.	- No significant disadvantages.
<i>Noise</i>	- No significant advantages.	- Internal combustion engine may produce objectionable volume noise.
<i>Fuels</i>	- Typically available in diesel.	- Little to no availability in alternate fuels.
<i>Cost</i>	- No significant advantages.	- No significant disadvantages.
<i>Vehicle, Parts, Service Availability</i>	- No significant advantages.	- Limited number of suppliers and mechanics. - Used models and lease/rent/charter opportunities less available than for other vehicles.
<i>Compatibility with Federally-Managed Sites</i>	- Low weight transfer to ground (per sq. ft.) enables travel over snow or sensitive terrain. - Appearance may have more novelty/visitor appeal than smaller-capacity 4x4's. - Travel over snow allows accessibility into remote areas without permanent investment in infrastructure or associated environmental impacts.	- Large size may be incompatible with some parks and remote areas.
<i>Vehicle Features</i>	- High passenger capacity for its intended use.	- More mechanically complex than std. buses.
<i>Other</i>	- No significant advantages.	- No significant disadvantages.

Physical Data

Length:	45 to 50 feet
Width:	11 to 12 feet
Height:	12.5 to 14.0 feet
Weight:	45,000 to 55,000 pounds
Power Source:	Diesel

Low Floor: Not available.

Economic Data

Vehicle Cost:	\$420,000 to \$670,000
Vehicle Life:	10 to 15 years

Operating Data

Maximum Operating Speed:	25 to 30 mph
Maximum Grade:	50%
Turn Radius:	55 to 75 feet
Passengers	
Seated:	40 to 56
Standees:	Not typical
Total:	40 to 56
Fuel Consumption:	3 to 5 mpg.

Notes

None.